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EXAMINER	
AN, SHAWN S	

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2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/695,722	HOURUNRANTA, ARI	
	Examiner	Art Unit	
	Shawn S. An	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6,7 and 10* is/are allowed.

6)☒ Claim(s) *1-5,8,9,11-21 and 25-29* is/are rejected.

7)☒ Claim(s) *22-24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/29/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. As per Applicant's instructions as filed on 6/29/07, claims 1-6, 8-15, and 19 have been amended, and claims 20-29 have been newly added.

Response to Remarks

2. Applicant's remarks filed on 6/29/07 have been fully considered but are not persuasive. The Applicant present arguments of which previously cited prior art references do not teach or disclose the following amended features:

A) generating after the transformation, a second reference value representing the abruptness of variation in certain information between the block and at least one previously transformed video data block ***from a same frame as the block***;

B) comparing the first reference value to a certain first threshold value and the second reference value to *a certain* ***predetermined*** *second threshold value*; and

C) detecting an error in the block, when the second reference value is greater than the second ***predetermined*** threshold value.

However, after careful scrutiny of the cited prior art reference, the Examiner disagrees, and maintains the grounds of rejection for reasons that follow.

In response to arguments A) - C), please refer to the following grounds of rejection.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. The claimed invention is directed to non-statutory subject matter.

Claim 7 (in preamble) and **claims 26-29** (by virtue of their dependency) comprise non-statutory subject matter.

The following are examples of acceptable language in overcoming non-statutory subject matter:

A. "Computer readable medium" encoded with "computer executable instructions ...,";

B. "A computer readable medium" embodied with a "computer program ...,".

Note: the merits of claims 7 and 26-29 will be examined.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-4, 8-9, 11-12, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al (XP-000898158) in view of Murphy et al (5,745,169) as previously discussed in the last Office action as filed on 3/26/07.

As per amended claims 1 and 15, Pickering et al discloses a device/method for decoding compressed video data, comprising:

means for transforming information about the spatial frequency distribution of a video data block into pixel values (page 774, **3.2**);

means for generating, after said transformation, a second reference value representing the abruptness of variation in certain information between the block and at least one previously transformed video data block ***from a same frame as the block*** (met by calculation of MAD between pixels inside and outside ***the upper and left edges of each 8 x 8 block in a frame***)(page 774, **3.1**);

means for comparing the second reference value to a certain ***predetermined*** second threshold value [the *u* values (contain certain ***predetermined*** second threshold

value, since it must by chosen) for the SED algorithm must be chosen] (page 774, 3.1.1 and 3.1.2; page 775, lines 1-4); and

means for detecting an error in the block, when the second reference value is greater than the second threshold value (page 774, 3.1.2).

Pickering et al does not particularly disclose means for generating, prior to said transformation, a first reference value representing the variations in information about spatial frequency distribution within the block, means for comparing the first reference value to a certain first threshold value; and means for detecting an error in the block, when the first reference value is greater than the first threshold value.

However, Murphy et al teaches means for generating, prior to said transformation, a first reference value representing the variations in information about spatial frequency distribution within the block, means for comparing the first reference value to a certain first threshold value; and means for detecting an error in the block, when the first reference value is greater than the first threshold value (Fig. 4).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a device/method for decoding compressed video data as taught by Pickering et al to incorporate Murphy et al's teachings as above as an efficiently alternative way to detect and conceal errors, thereby increasing the quality of decoded display video images.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al and Murphy et al as applied to claim 1 above, and further in view of Shimoda et al (5,703,889) as previously discussed in the last Office action as filed on 3/26/07.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al and Murphy et al as applied to claim 2 above, and further in view of Murata (5,535,013) as previously discussed in the last Office action as filed on 3/26/07.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al (XP-000898158) in view of Murphy et al (5,745,169) and Shimoda et al (5,703,889).

As per amended claim 19, Pickering et al in view of Murphy et al discloses substantially all of the claimed limitations (with the exception of one feature, see next paragraph), which is substantially similar with respect to claim 1 as discussed above. Pickering et al discloses the second test comprising its detailed limitations, and Murphy et al teaches the first test comprising its detailed limitations (see claim 1 discussion).

Pickering et al and Murphy et al fail to disclose dividing DCT coefficients of the video data block into at least a low-frequency group and a high-frequency group.

However, Shimoda et al teaches an error detecting decoder comprising a concept of dividing DCT coefficients of the video data block into at least a low-frequency group and a high-frequency group so that low-frequency group/components are free from the influence of errors caused in the high-frequency group/components, thereby reducing a visual deterioration (abs.; Fig. 24, 92; col. 23, lines 51-54).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a method for decoding compressed video as taught by Pickering et al to incorporate Murphy's teachings as discussed above so as to generate a first reference value representing the variations in information about spatial frequency distribution within the block, to compare the first reference value to a first threshold, and to detect an error in the block, as a response to either of the first and second reference values being greater than the first and the second predetermined threshold value, respectively, as an alternatively efficient method for providing an improved method for detecting presence of errors in a video signal, and also incorporate Shimoda et al's teaching as above so that low-frequency group/components are free from the influence of errors caused in the high-frequency group/components, thereby reducing a visual deterioration.

10. Claims 20 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al (XP-000898158) in view of Murphy et al (5,745,169).

Regarding claim 20, Pickering et al discloses a device/method for decoding compressed video data, comprising:

transforming information about the spatial frequency distribution of a video data block into pixel values (page 774, **3.2**);

generating, after said transformation, a second reference value representing the abruptness of variation in certain information between the block and at least one previously transformed video data block ***from a same frame as the block*** (met by calculation of MAD between pixels inside and outside ***the upper and left edges of each 8 x 8 block in a frame***)(page 774, **3.1**);

comparing the second reference value to a certain ***predetermined*** second threshold value [the *u* values (contain certain ***predetermined*** second threshold value, since it must by chosen) for the SED algorithm must be chosen] (page 774, 3.1.1 and 3.1.2; page 775, lines 1-4); and

detecting an error in the block, when the second reference value is greater than the second threshold value (page 774, 3.1.2).

Pickering et al does not seem to particularly disclose:

a memory configured to store at least video data blocks; and

at least one processor coupled to the memory, the processor configured to generate, prior to said transformation, a first reference value representing the variations in information about spatial frequency distribution within the block, to compare the first reference value to a certain first threshold value; and to detect an error in the block, when the first reference value is greater than the first threshold value.

However, Murphy et al teaches a device for decoding compressed video data, comprising:

a memory (Fig. 3, 43-44) configured to store at least video data blocks; and

at least one processor (49) coupled to the memory (43-44), the processor configured to generate, prior to said transformation, a first reference value representing the variations in information about spatial frequency distribution within the block, to compare the first reference value to a certain first threshold value; and to detect an error in the block, when the first reference value is greater than the first threshold value

(Fig. 4).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a device/method for decoding compressed video data as taught by Pickering et al to incorporate Murphy et al's teachings as above to implement an efficiently alternative system to detect and conceal errors, thereby increasing the quality of decoded display video images.

Regarding claim 25, Pickering et al discloses a device/method for decoding compressed video data, comprising:

transforming information about the spatial frequency distribution of a video data block into pixel values (page 774, **3.2**);

generating, after said transformation, a second reference value representing the abruptness of variation in certain information between the block and at least one previously transformed video data block ***from a same frame as the block*** (met by calculation of MAD between pixels inside and outside ***the upper and left edges of each 8 x 8 block in a frame***)(page 774, **3.1**);

comparing the second reference value to a certain ***predetermined*** second threshold value [the *u* values (contain certain ***predetermined*** second threshold value, since it must by chosen) for the SED algorithm must be chosen] (page 774, 3.1.1 and 3.1.2; page 775, lines 1-4); and

detecting an error in the block, when the second reference value is greater than the second threshold value (page 774, 3.1.2).

Pickering et al also discloses program instructions, wherein the execution of the program instructions resulting in SED (statistical error detection) algorithms, and decoding with the SED algorithm enabled in the decoder (page 775, **4.**).

Pickering et al does not seem to particularly disclose:

generating, prior to said transformation, a first reference value representing the variations in information about spatial frequency distribution within the block, comparing the first reference value to a certain first threshold value; and detecting an error in the block, when the first reference value is greater than the first threshold value.

However, Murphy et al teaches a device/method for decoding compressed video data, comprising:

generating, prior to said transformation, a first reference value representing the variations in information about spatial frequency distribution within the block, comparing the first reference value to a certain first threshold value; and detecting an error in the block, when the first reference value is greater than the first threshold value (Fig. 4).

Therefore, it would have been considered obvious to a person of ordinary skill in the relevant art employing a device/method for decoding compressed video data as taught by Pickering et al to implement a computer readable medium comprising program instructions, wherein the execution of the program instructions results in the above operations (methods of Pickering et al and Murphy et al discussed above), and to incorporate Murphy et al's teachings as above as an efficiently alternative method to detect and conceal errors, thereby increasing the quality of decoded display video images.

11. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al and Murphy et al as applied to claim 20 above, and further in view of Shimoda et al (5,703,889).

Claim 21 limitations are substantially the same as the claim 5 limitations. Therefore, the claim 21 is rejected substantially the same manner/way as the claim 5 as previously discussed in the last Office action as filed on 3/26/07.

12. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al and Murphy et al as applied to claim 25 above, and further in view of Shimoda et al (5,703,889)

Claim 26 limitations are substantially the same as the claim 5 limitations. Therefore, the claim 26 is rejected substantially the same manner/way as the claim 5 as previously discussed in the last Office action as filed on 3/26/07.

Allowable Subject Matter

13. Claims 6-7 and 10 are allowed.

14. Claims 6-7 and 10 are allowed as having incorporated the allowable subject matter (novel features) as previously discussed in the last Office action as filed on 3/26/07.

The prior art of record fails to anticipate or make obvious the novel features.

15. Claims 22-24 and 27-29 (contingent upon overcoming 101 rejection as above) are objected to as being dependent upon rejected base claims 20 and 25, respectively, but would be allowable:

if either claim 22 or claim 24 is rewritten in independent form including all of the limitations of the base claim 20 and any intervening claims; and

if either claim 27 or claim 29 is rewritten in independent form including all of the limitations of the base claim 25 and any intervening claims.

Dependent claims 22, 24, 27, and 29 recite novel features, wherein the prior art of record fails to anticipate or make obvious the novel features.

Accordingly, if the amendments are made to the claims listed above, and if rejected claims are canceled, the application would be placed in condition for allowance.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to *Shawn S An* whose telephone number is 571-272-7324.

18. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SHAWN AN
PRIMARY EXAMINER

9/17/07

COURTESY COPY (1st non-final Office action) as filed on 4/28/03

DETAILED ACTION

Drawings

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawing will be required when the application is allowed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 8-9, 11-12, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al (XP-000898158) in view of Murphy et al (5,745,169).

Regarding claims 1, 4, 9, 15, and 17, Pickering et al discloses a device/method for decoding compressed video data, comprising:

means for transforming information about the spatial frequency distribution of a video data block into pixel values (page 774, **3.2**);

means for generating, after the transformation, a second reference value representing a variation of information between the block and at least one previously transformed video data block (page 774, **3.1**);

means for comparing the second value to a certain second threshold value (page 774, 3.1.1. and 3.1.2.); and

means for detecting an error in the block when the second reference value is greater than the second threshold value (page 774, 3.1.2.).

Pickering et al does not appear to disclose means for generating, prior to the transformation, a first reference value representing a variation of information about spatial frequency distribution within the block, means for comparing the first value to a certain first threshold value, and means for detecting an error in the block when the first reference value is greater than the first threshold value.

However, Murphy et al teaches the conventionally well known device of means for generating, prior to the transformation, a first reference value representing a variation of information about spatial frequency distribution within the block, means for comparing the first value to a certain first threshold value, and means for detecting an error in the block when the first reference value is greater than the first threshold value (Fig. 4).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a device/method for decoding compressed video data as taught by Pickering et al to incorporate the Murphy's teachings as discussed above as an efficient alternative way to detect and conceal errors, thereby increasing the quality of decoded display video images.

Regarding claims 2-3, 14, and 16, Pickering et al discloses

means for generating, after decoding a number of blocks forming a macroblock, a third reference value representing a variation of information within the macroblock and previously decoded macroblock (page 774, **3.2.**);

means for comparing the third value to a certain third threshold value (page 774, 3.2.1. and 3.2.2.); and

means for detecting an error in the macroblock when the third reference value is greater than the third threshold value (page 775, 3.2.2.).

Regarding claim 8, the Examiner takes official notice that DC component of the block in a conventional DCT matrix is well known in the art. Therefore, it would have been obvious to generate a reference value from the differences between DC components of the current and previous transformed block as an efficient alternative way to detect and conceal errors.

Regarding claim 11, Pickering et al discloses dividing AC coefficients of the macroblock into groups of Y (luminance), U (chrominance), and V (chrominance) blocks, and generating set of values representing the AC values of Y, U, and V blocks (page 774, **3.2,** 1st para.). Therefore, it would have been obvious to generate the third reference value from the U, V components and generate the third threshold value from the Y component as an efficient way to detect and conceal errors.

Regarding claim 12, Pickering et al discloses macroblocks of different types comprising Y (luminance), U (chrominance), and V (chrominance) blocks, and generating set of values representing the Y, U, and V blocks (page 774, **3.2,** 1st para.). Furthermore, the Examiner takes official notice that DC component of the block in a conventional DCT matrix is well known in the art. Therefore, it would have been obvious to generate the third reference value from the difference between the DC values of U, V blocks and generate the third threshold value from the difference between the DC values of Y blocks and at least one previous decoded macroblock as an efficient way to detect and conceal errors.

Regarding claim 18, Pickering et al discloses mobile terminal (page 773, 1. Introduction).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al and Murphy et al as applied to claim 1 above, and further in view of Shimoda et al (5,703,889).

Regarding claim 5, the combination of Pickering et al and Murphy et al fails to disclose dividing DCT coefficients into two parts being associated with higher frequencies and lower frequencies, respectively.

However, Shimoda et al teaches an error detecting decoder comprising a concept of dividing DCT coefficients into two parts being associated with higher frequencies and lower frequencies, as first part and the second part, respectively (col. 23, lines 1-38).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a device/method for decoding compressed video data as taught by Pickering et al to incorporate the Shimoda et al's teaching as discussed above so that the Murphy et al's first value can be derived from the first part and the first threshold can be derived from the second part as an efficient alternative way to detect and conceal errors, thereby increasing the quality of decoded display video images.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pickering et al and Murphy et al as applied to claim 2 above, and further in view of Murata (5,535,013).

Regarding claim 13, the combination of Pickering et al and Murphy et al does not appears to disclose generating the third reference value from the absolute sum of values of AC coefficients in a macroblock, and generating the third threshold value from the estimated sum of values of AC coefficients to account for the variation in DC coefficients in the number of blocks.

However, Murata teaches conventional concept of generating a reference value from the absolute sum of values of AC coefficients in a macroblock, and generating predefined threshold value (Fig. 4).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing a device/method for decoding compressed video data as taught by Pickering et al to incorporate the Murata's teaching as discussed above so that the Pickering et al's third reference value can be derived from the absolute sum of values of AC coefficients in a macroblock and the third threshold can be derived from the estimated sum of values of AC coefficients to account for the variation in DC coefficients in the number of blocks as an efficient alternative way to detect and conceal errors, thereby increasing the quality of decoded display video images.

Allowable Subject Matter

6. Claims 6-7 and 10 are objected to as being dependent upon a rejected base claim 1, but would be allowable: if claim 6 is rewritten in independent form including all of the limitations of the base claim 1 and any intervening claims; and if claim 10 is rewritten in independent form including all of the limitations of the base claim 1 and any intervening claims.

Dependent claims 6-7 recite the novel features comprising the steps of:

forming at least two sets of DCT coefficients from the coefficients not belonging to the first part;

generating a first reference value for each formed set of DCT coefficients;

generating a corresponding first threshold value for each formed set of DCT coefficients;

comparing the first reference value of the set with the first threshold value of the set; and

detecting an error in the block when the first reference value of the set is greater than the corresponding first threshold value pf the set.

Dependent claim 10 recites the novel features comprising the steps of:

calculating a first difference value representing the difference between the pixel value of the boundary pixel and the closest boundary pixel in the same row of the adjacent block;

calculating extrapolated boundary pixel values from the boundary pixels and the closest pixel in the same row of the same block;

calculating a second difference value comprising the difference between the extrapolated boundary pixel values;

comparing the first and second difference values;

adding the smaller of the first and the second values to a sum of difference calculated in the same way for all pixels in the boundary of the block; and

generating for each block boundary, a second reference value from the sum of differences of all pixels in the boundary.

Accordingly, if the amendments are made to the claims listed above, and if rejected claims are canceled, the application would be placed in condition for allowance.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

A) Nakatani et al (5,517,327), Data processor for image data using orthogonal transformation.

B) Chien et al (5,621,467), Temporal spatial error concealment apparatus and method for video signal processors.

C) Hourunranta (EP 0,999,709 A2), Error detection in low bit rate transmission.

8. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn An whose telephone number (703) 305-0099 and schedule are Tuesday-Friday.

SHAWN S. AN
PATENT EXAMINER

SSA

April 24, 2003